An Assessment of Cheyenne River Sioux Tribe Watersheds Impaired by Nonpoint Source Pollution

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Summary:

On the Cheyenne River Sioux Tribe (CRST) Reservation most Nonpoint Source (NPS) Pollution is caused by agriculture, Hydro-modification, land disposal, and resource extraction. The non-discrete nature of NPS pollution presents significant difficulties for CRST in reference to monitoring and managing surface water resources. Best Management Practice pilots have been started to reduce or control the NPS pollution. The Structural and Nonstructural controls and operational and maintenance procedures have been applied to reduce the NPS pollution activities.

NPS pollution Characteristics

Occurs over extensive areas
Enters receiving water in a diffuse manner
Carried by water over land or through soil profile to receiving water
Difficult to trace to point of origin
Magnitude related to climatic events

Indian Reservations in Region 8

27 Tribes and 26 Reservations
Region 8 Indian Reservation land:
28,468, 062 acres where as US Indian Reservation land: 69,420,257 acres
41% of land located in Region-8 with approximately 60,500 stream miles

Socioeconomic Condition of CRST

West Central South Dakota- 4,230 miles
70% Indian & 30% non-Indian Population
Agriculture is the primary activity
Unemployment-70%
Farmers and Ranchers supplement income through off-farm employment

Cheyenne River Sioux Tribes

Land Base: (2,787,207 acres)
(Trust and allotted-1,391,58998, Feeland-1,300,193, and total water areas-95,424 acres)
Land Use:
- Rangeland- 81%
- Cropland- 18%
- Others 1%

(including Forest land, Low density urban, Construction, Small water areas etc)

Cheyenne River ST Reservation in South Dakota

Beneficial/Use Categories

Domestic Water Supply
Fish and aquatic and Wildlife propagation
Irrigation and agricultural supply
Tribal Cultural and Spiritual
Recreation

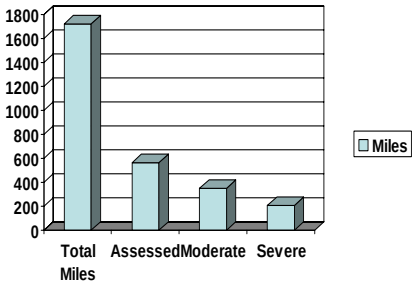
Surface Water Quality

Fifty eight Streams- drain to the Missouri River
Sixteen Watersheds group established
Two watersheds sampled each year since 2001
Quality of surface water ranges from moderate to very poor depending on water source and time of year
Water quality is better in spring and poor in summer and fall

Source of Impairment at CRST

Known-9 water bodies, unknown-59

Agriculture number one industry 767 farms responsible for 90%
NPS, Nutrients-fertilizers, wastes, natural etc- nuisance growth of algae, weeds, Misuse of pesticides, decrease dissolved oxygen level, Increase total dissolved solids, sediments and
Mining activities- Metals, Other pollutants



Degree of NPS Impacts at CRST

7 Water bodies- Severe impacts
41 Water bodies- Moderate impacts
16 Water bodies- Slight impacts
Assessment Level:
- -9 Water bodies monitored
- -55 Water bodies evaluated

CRST Best Management Practices

General Management Program:
- -Administration, assessment, monitoring, and general education

Specific Management Program:
- -BMPs associated with agriculture, land disposal, hydro-modification, and resource extraction

CRST Pilot Project:

Location: Rousseau Creek Challenges: Stream bank/channel alteration, Construction etc.

Selected a drainage in southeastern part
Rousseau Creek- 25 miles, impaired, riparian
16 producers with different agricultural habitat

Solution: Structural and nonstructural control, sediment

Vegetation filter strips-Replanting naturally occurring vegetation (cotton woods, willows, sedges, and legumes) in several hundred square feet or smaller.
Other BMPs site specific for each agriculture and land disposal activities, hydro- modification

Conclusion:

NPS pollution is larger problem at CRST than available resources. Tribes need more scientific, technical, and financial support to solve the water quality problems